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## FURTHER OBSERVATIONS ON COULTER'S WHITEFISH

(*Coregonus couleri*. Eigenmann.)

In Copeia, June 24, 1917, No. 45, I called attention to "A Second Record for the Coulter's Whitefish," and presented some notes comprising proportional measurements, etc.

In the same publication, issue of October 26, 1917, No. 50, p. 93, Professor J. O. Snyder called attention to a prior "second record" which he had published in proceedings of the U. S. National Museum, XXXVI, page 430. So, my second record was really the third, and unless I have overlooked other references the present notice constitutes the fourth record.

The fish to which Professor Snyder referred were collected June, 1894, in Diamond Lake, Stevens County, Washington, the lake being in the Columbia basin. Professor Snyder stated that some of them were 127 mm. in length and appeared to be fish of the year, and suggested that adults of the species may reach a much larger size, and that it is not impossible that the species may be a deep water form of some food value.

In my "Second Record" I neglected to state that the fish, which were collected in Alaska, November 1, 1912, ranging in length from 150 to 158 mm. were mature individuals ready to spawn.

Three of Eigenmann's cotypes from Kicking Horse River, Field, B. C., collected probably in September,

comprise 2 mature males 110 and 92 mm. long respectively and 1 mature female 100 mm. long. The spermaries and ovaries are well advanced, indicating that they would have spawned that year.

The present notes pertain to two collections from Lake Aleknagik, Alaska. One comprises 4 specimens taken July 20, 1909, by M. C. Marsh. The second comprises 5 specimens taken by G. Dallas Hanna, August 2, 1912. The fish were said to be passing out of the lake in large numbers. Doubtless it was the spawning run for all of the fish; 3 females and 2 males were in breeding condition. These fish ranged from 148 to 197 mm. total length.

Marsh's collection comprised 3 females and 1 male ranging in total length from 165 to 180 mm. In the matter of size and value as food Prof. Snyder's suggestion seems to be something of a fulfilled prophecy.

The fish are as large as the average smelt (*Osmerus mordax*). They closely resemble the round whitefish or menominee (*Coregonus quadrilateralis*). The most striking superficial difference is rounded or blunt muzzle and conspicuously large scales. I strongly suspect that this species may have been comprised in other collections and confused with the round whitefish.

In fact I believe that the figure of the head of "*Coregonus quadrilateralis*," from Port Halkett, shown by Gunther (Cat. VI, p. 176) may be this species. There appear to be two Port Halketts, one in British Columbia, the other at the mouth of the McKenzie River, possibly the latter should be read "Fort" Halkett.

The specimens of Hanna's collection are bright silvery on the sides and show no trace of dark spots, but each of 4 of the Marsh lot has a series of about a dozen roundish black spots the size of the eye along the side immediately above and touching the lateral line. These spots are more vertically oblong forward than posteriorly. They probably represent parr marks which were brought out by preservation in formalin.

The stomach of specimens in Marsh's collection contained no food, excepting a little fine indetermin-

able mush. The stomachs of all but one of Hanna's fish contained small eggs of some salmonid. These were about the size of brook trout (*S. fontinalis*) eggs. One fish contained 1, another 7 and 2 others 18 each.

Detailed measurements to six female and three male Coulter's Whitefish follow. The former measure 175 to 198 mm. in total length. 150 to 174 mm. in length to base of caudal. The latter measure 159 to 182 in total length; 135 to 152 in length to base of caudal; measurements in percentage of length to base of caudal are as follows:—

Distance from tip of snout to nape, decreasing with size, 15.00 to 16.15, females; 15.15 to 16.30, males. Distance from nape to front of dorsal 29.10 to 31.20, females; 29.00 to 31.00, males. Length of base of dorsal 11.60 to 12.95, females; 11.90 to 12.50, males. Length of longest dorsal ray (decreasing with size in the females) 12.50 to 14.85, females; 14.30 to 14.80, males. Distance from posterior base dorsal to adipose 24.60 to 27.55, females; 25.00 to 25.60, males. Length of base of adipose 4.70 to 6.00, females; 4.61 to 6.45, males. Distance posterior base of adipose to base of upper caudal lobe 10.70 to 11.70, female; 9.63 to 12.50, males. Length of upper caudal lobe, 18.15 to 22.00, females; 19.80 to 23.00, males. Length of longest upper caudal ray 14.20 to 16.80, females; 16.50 to 17.20, males. Length of tail (6.65?) 8.11 to 9.03, females; 7.90 to 10.00, males. Length of middle ray of caudal 4.82 to 6.45, females; 4.61 to 6.65, males. Length of lower caudal lobe 18.10 to 21.30, females; 21.70 to 22.90, males. Length of longest caudal ray, 15.50 to 16.80, females; 17.15 to 17.20, males. Least depth caudal peduncle 6.31 to 7.00, females; 6.57 to 7.13, males. Distance from tip of snout to base of pectoral 18.15 to 21.90, females; 20.70 to 21.50, males. Length of longest pectoral ray (decreasing with size in female) 13.80 to 16.05, females; 16.30 to 16.80, males. Distance from base of pectoral to base of ventral 29.10 to 31.60, females; 29.60 to 31.20, males. Length of longest ventral ray 12.50 to 14.00, females;

14.85 to 15.45, males. Distance from base of ventral to front of anal 23.00 to 25.20, females; 21.50 to 24.70, males. Length of base of anal 9.67 to 11.30, females; 10.70 to 11.20, males. Length of longest anal ray 12.00 to 19.40, females; 14.10 to 14.50, males. Distance from posterior base of anal to base of lower caudal lobe 12.70 to 19.40, females; 12.90 to 14.50, males. Length of head 19.40 to 21.30, females; 21.10 to 21.15 (21.42?), males. Depth of body 16.78 to 18.75, females; 17.10 to 18.45, males.

The following measurements are in percentage of length of head. Depth head through eye 40.5 to 47.1 females; 40.6 to 45, males. Width of interorbital space 25.00 to 29.1, females; 24.6 to 26.68, males. Distance from tip of snout to posterior edge of preopercle 66.7 to 74.2, females; 68.7 to 73.3, males. Vertical diameter of eye 17.6 to 24.2, females; 18.75 to 22.8, males. Longitudinal diameter of the eye 20.3 to 26.5, females; 21.66 to 24.6, males. Length of maxillary bone 15.1 to 22.6, females; 21.9 to 22.8, males. Width of maxillary bone 8.85 to 9.65, females; 9.40 to 10.50, males. Length of supplementary maxillary 11.30 (one female); 12.5 to 14.55, (two males). Width of supplementary maxillary 6.43 (one female); 3.91 to 4.4, (two males). Length of mandible 30.4 to 34.4, females; 31.3 to 35.2, males.

The number of rays are as follows. Branchiostegals  $\frac{7 \text{ to } 8}{7 \text{ to } 8}$ , females;  $\frac{7 \text{ to } 7}{7 \text{ to } 8}$ , males. Dorsal rays  $\frac{3 \text{ to } 4}{8 \text{ to } 10\frac{1}{2}}$ , females;  $\frac{3 \text{ to } 4}{8 \text{ to } 9}$ , males. Anal rays  $\frac{3}{8\frac{1}{2} \text{ to } 9\frac{1}{2}}$ , females;  $\frac{3 \text{ to } 4}{8\frac{1}{2} \text{ to } 9\frac{1}{2}}$ , males. Pectoral rays 14 to 15. Scale counts are as follows:—longitudinal series above lateral line (64?) 68 to 70 plus 3 to 5, females; 70 to 75 plus 3, males. From front of dorsal to and including lateral line 7 to 8, females, 7 males; from lateral line to front of ventral 6; in front of dorsal 21 to 25 females, 22 to 25 males; below dorsal 9 to 10; from posterior base of dorsal to adipose 18 to 22 females, 20 to 22 males.

WILLIAM C. KENDALL,  
U. S. Bureau of Fisheries.

## A COLLECTION OF AMPHIBIANS AND REPTILES FROM NORTHEASTERN WASHINGTON

The following collection of amphibians and reptiles was made by the writer while at Springdale, Stevens County, Washington, during August and September and is deposited in the Museum of Zoology of the University of Michigan.

The town of Springdale lies in the Colville valley about halfway between Spokane and Colville. Its altitude is about 2000 feet. Sheep Creek, the head of the Colville River, flows through the town. Rocky hills and low mountains border the valley on both sides. Rainfall in July, August, and September is usually too scant to support any but the hardiest herbaceous vegetation. Even the natural conifer forests are not dense except in valleys or on the north slopes of the mountains. The forests in the vicinity of Springdale have all been logged off where commercially profitable, and this is probably true throughout the Colville valley within several miles of the Great Northern Railroad. The region is therefore sparsely covered with second growth conifers, largely pines, and herbaceous vegetation parched in summer except along water courses.

Apparently the only form well-known to the inhabitants of the region, that was not found, is the Bull-Snake, *Pituophis*.<sup>1</sup> The following species were secured:

*Ambystoma macrodactylum* Baird.—The common salamander of the region and the only species found.

<sup>1</sup>The Bull-Snake undoubtedly occurs here, as a specimen was taken at Marshall (near Spokane), Oct. 5, 1890, by C. P. Streater (U. S. Nat. Museum No. 16495) and two specimens at Omak Lake, Okanogan County, May 14 and 16, 1920, by G. G. Cantwell (U. S. Nat. Mus. No. 63277-8). These specimens were kindly loaned to me by Dr. Leonhard Stejneger. They may best be referred to *Pituophis catenifer deserticola* Stejneger. Their systematic characteristics are as follows: No. 63277, female, scale rows, 31; ventrals, 224; caudals, 63; supralabials, 8; infralabials, 11; preoculars, 1 and 2; postoculars, 4; temporals, 4; two small loreals on each side; total length, 975 mm.; tail length, 143 mm.; proportionate tail length, .147; 58 dorsal blotches on body, and 17 on tail. No. 63278, female; scale rows, 31; ventrals, 224; caudals, 53; supralabials, 8; infralabials, 11 and 13; preoculars, 2; postoculars, 3 and 4; temporals, 4; total length, 876 mm.; tail length, 118 mm.; proportionate tail length, .135; dorsal blotches on body, 48, on tail, 14. No. 16495—male; scale rows, 30; ventrals, 226; tail incomplete; supralabials, 8; infralabials, 11 and 12; preoculars, 2; postoculars, 3; temporals, 2 (due to fusions); 50 dorsal blotches on body.

Three specimens secured, all from under bark or logs in well shaded places near streams.

*Rana pretiosa pretiosa* (Baird and Girard).—Common along streams, but nowhere plentiful. A stupid frog, easily caught; neither a strong jumper nor a fast swimmer. The salmon color of the underside is absent from the newly transformed adult; it increases in extent and brilliancy with increase in size, occasionally overspreading nearly the entire under surface in a large adult. About one hundred specimens secured.

*Bufo boreas boreas* (Baird and Girard).—Common. Two specimens found along Sheep Creek.

*Hyla regilla* Baird and Girard.—Undoubtedly common, although only three examples were found. These were all in dry situations, one in an open field late in the day, one covered with dust, at the entrance of a small hole in the ground near a railroad track, and the third on an open hill top.

*Coluber constrictor flaviventris* (Say).—Not very common. One example found on a dry hillside near the town. Its scutellation is as follows: ventral plates, 172; caudals, 95 pairs; scale rows, 17-15; lower labials, 9; right upper labials, 8; left upper labials, 7, the second partly divided.

*Thamnophis sirtalis parietalis* (Say).—Common along Sheep Creek and on the lower levels. None found on the hills. About 40 examples secured.

*Thamnophis ordinoides elegans* (Baird and Girard).—Found in the same situations as the last species and but little less commonly. About 30 examples secured.

*Crotalus oregonus* Holbrook.—Common in favorable situations on the rocky hills, occasionally straying into the valley. Two specimens.

*Chrysemys marginata bellii* (Gray).—Not uncommon in Sheep Creek. Three specimens secured and one more seen.

FRANK N. BLANCHARD,  
*University of Michigan.*

## NOTES ON COTTUS ASPER AND COTTUS ALEUTICUS

1. *Cottus asper* Richardson.

This species<sup>1</sup> has been noted from but one stream in California south of Monterey County, Dr. Jordan having recorded<sup>2</sup> specimens (which have been re-examined), under the erroneous identification of *Cottus gulosus*, from San Luis Creek. Despite this single record, *Cottus asper* is common near the mouths of streams in San Luis Obispo County: the writer has seined numerous examples in the fresh tide-water of Morro, Chorro, Oso and San Luis Creeks. Others were obtained farther south, in the slightly brackish lagoon at the mouth of Santa Inez River, Santa Barbara County; and a single one in the brackish lagoon at the mouth of Ventura River, Ventura County, which becomes the southernmost record-station for the species.

In a few of the specimens from Morro and Chorro Creeks the prickles cover the entire body, but in all of the others mentioned above, the prickly area is reduced to a patch of varying size behind the base of the pectoral fin. Dorsal rays, IX (X in one case), 19 or 20; anal rays, 16 to 18 (the last soft-ray counted as branched).

The largest of these specimens, 145 mm. long to the caudal fin (captured alive), had swallowed and was digesting a half-grown individual of the same species, so large that its tail still protruded from the mouth of its capturer.

2. *Cottus aleuticus* Gilbert.

A single specimen of this sculpin was taken in a very small stream, near its mouth, in northern San Luis Obispo County, between the town of San Simeon and the light-house at Piedras Blancas, California. The species has never before been recorded so far south.

<sup>1</sup>Concerning the systematic and distributional status of this species see: Snyder, Bull. U. S. Bur. Fish., 27, 1907 (1908), p. 185.

<sup>2</sup>Bull. N. S. Fish. Comm., 14, 1894, p. 141.



Dorsal rays, IX, 19; anal rays, 12 (the last branched).

CARL L. HUBBS,  
*University of Michigan.*

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### DOES THE CRICKET FROG OCCUR IN NEW ENGLAND?

The Cricket Frog, *Acris gryllus* (Le Conte), is included in Mr. Henshaw's list of New England Batrachia (1904). This is based on a hear-say record in Cope's "Batrachia of North America" (1899). Cope says:—"Prof. A. E. Verrill tells me that he has seen a few specimens of this species near New Haven, Conn., and that he considers that place to be about the northern limit of its range." Drowne includes it in the Batrachia of Rhode Island (Monograph No. 15, Roger Williams Park Museum, 1905), based on the following:—"Recorded from Rhode Island by Prof. Barlow of Kingston."

This interesting "tree frog with wholly terrestrial habits" while diurnal in its activity, is difficult to capture or even observe owing to its very small size, great leaping powers and quickness in diving. It is said to be common in portions of Long Island. I have been unable to locate any actual New England specimens. The above evidence seems hardly to warrant its inclusion in a New England faunal list.

H. L. BABCOCK,  
*Boston Society Natural History.*

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